AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (original)   A method for obtaining reproducibility of the retention times of the components of a mixture to be analysed in an apparatus for gaschromatographic analysis provided with a capillary column, when one or more of the following variations occurs: a variation in the length of the column, or alternatively replacement of the column with a column having identical real specifications with the exception of the length, and/or a variation in the output pressure from said column, given that the pneumatic resistance $KC_{old} = K(L_{old})$ of said column is known, the analytical expression of which is:

$$K(L_{old}) = \frac{256 \cdot L_{old}}{\pi \cdot d^4} \cdot \frac{\eta_0 \cdot P_{ref}}{T_{ref}^{1+\alpha}} \qquad (9)$$

where:

d is the diameter of the column;

Pref, Tref are, respectively, the reference pressure and the reference temperature (referred to standard conditions);

$\eta 0$ is the viscosity of the carrier gas at the reference conditions;

L_{old} is the initial length of the column;

α is the coefficient depending upon the type of carrier gas used;

and in which the temperature of said capillary column is maintained equal, instant by instant, starting from the introduction of the mixture into the apparatus, for each analysis of said mixture before and after one of said variations, characterized by the following steps:

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- measuring, prior to said variations, the pressure $p_{i,old}$ of the carrier gas at the input section of the column, and the pressure $p_{o,old}$ of the carrier gas at the output section of the column;

- following upon said variations, measuring the new

  pneumatic resistance KC_{new} $K(L_{new})$ of the column, the analytical expression of which is:

$$K(L_{new}) = \frac{256 \cdot L_{new}}{\pi \cdot d^4} \cdot \frac{\eta_0 \cdot P_{ref}}{T_{ref}^{1+a}} \qquad (5)$$

wherein:

L_{new} is the new length of the column;

- selecting, after said variations, the new pressure $p_{o,new}$ at output from the column;

- calculating a new input pressure $p_{i,new}$ or a new mass flow F_{new} (referred to standard conditions) of the carrier gas, using the relation:

$$\lambda = \frac{j_{old}}{j_{new}} \cdot g \cdot \frac{p_{o,new}}{p_{o,old}} \qquad (1)$$

where:

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$$g = \frac{K(L_{new})}{K(L_{old})} = \frac{L_{new}}{L_{old}} \quad (2)$$

$$j_{new} = \frac{3}{2} \cdot \frac{\left(\dfrac{p_{i,new}}{p_{o,new}}\right)^2 - 1}{\left(\dfrac{p_{i,new}}{p_{o,new}}\right)^3 - 1} \quad (3)$$

$$j_{old} = \frac{3}{2} \cdot \frac{\left(\dfrac{p_{i,old}}{p_{o,old}}\right)^2 - 1}{\left(\dfrac{p_{i,old}}{p_{o,old}}\right)^3 - 1} \quad (4)$$

-      setting, after said variations, said new input pressure $p_{i,new}$

or said new mass flow F_{new} of the carrier gas into said apparatus for gaschromatographic analysis

in correlation to λ.

2. (original)   The method according to Claim 1, in which said method the following

steps:

-      storing the known quantities $K(L_{old})$, $K(L_{new})$, $p_{i,old}$, $p_{o,old}$,

        $p_{o,new}$ in electronic means for storage of said apparatus for

gaschromatographic analysis;

-      storing the relation λ in said electronic storage means;

-      using λ for calculating and entering said quantity F_{new} or

$p_{i,new}$;

- providing means for setting and control of the input pressure $p_{i,new}$ and/or of the

 flow rate F_{new} in said apparatus for analysis.

3. (previously presented)   The method according to Claim 1, in which for calculation

of said input pressure $p_{i,new}$ the following relation is used:

$$p_{i,new} = \sqrt{p_{o.new}^2 + \lambda \cdot g \cdot \left(p_{i,old}^2 - p_{o.old}^2\right)} \qquad (6).$$

4. (previously presented)   The method according to Claim 1, in which for calculation

of said mass flow F_{new}, the following steps are envisaged:

- measuring the mass flow F_{old}, referred to standard conditions,

 of the carrier gas before said variations;

- calculating said quantity F_{new} using the relation:

$$F_{new} = F_{old} \cdot \lambda \qquad (7).$$

5. (previously presented)   The method according to Claim 1, in which for the

calculation of said mass flow F_{new}, there are envisaged the steps of:

- measuring, before said variations, the temperature T_{col} of the capillary column;

- calculating the mass flow F_{old}, referred to standard conditions, of the carrier gas

 before said variations, using the relation:

$$F_{old} = \frac{p_{i,old}^2 - p_{o,old}^2}{KC_{old} \cdot T_{col}^{1+\alpha}} \qquad (8)$$

where:

α is the coefficient depending upon the type of carrier gas used;

$KC_{old} = K(L_{old})$ is the pneumatic resistance of the column according to relation (5) of

Claim 1;

- calculating said quantity F_{new}, using the relation:

$$F_{new} = F_{old} \cdot \lambda \qquad (6).$$

6. (previously presented)   The method according to Claim 4, in which, if the

temperature of said capillary column follows a trend which varies in time, the flow F_{old} is

measured or calculated instant by instant, and the flow F_{new} is calculated instant by instant.

7. (previously presented)   The method according to Claim 1, in which said quantities

$KC_{old} = K(L_{old})$ and $KC_{new} = K(L_{new})$ are measured by means of blank tests of said

gaschromatographic apparatus.

8.-12. (canceled).

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